



Assessment of nutritional status of school going children in district Mardan at Khyber Pakhtunkhwa in Pakistan

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ABSTRACT

Malnutrition contributes directly or indirectly to more than 60% of 10 million child deaths each year. There are many determinants of malnutrition among school-going children. These include poverty, illiteracy amongst parents and environmental factors, diseases, and proper diet. This is an interesting work aimed to analyze the nutritional status of primary and secondary school children in an urban region of Mardan, the second largest city in Khyber Pakhtunkhwa (KPK). A cross-sectional study was performed in a primary and high school of Govt sector in an urban region of Takht Bhai Mardan. A Total of 1500 children between the ages of 4-15 years were studied. A systematic random sampling technique was applied for sample collection. A total of 1500 children between the ages of 4-15 were analysed for this study. Out of 1500 school going students 600(40%) were found positive and 900(60%) were found normal according to age. Gender wise analysis shows that in male students 210(35%) were found positive for stunting and 150 (25%) male students were underweight. In overall female students 135(22.5%) were found stunting and 105 (17.5%) were found underweight. According to age group wise between 4 to 10 years 90 (10%) female students were found stunting and 60(6.6%) were found underweight. While in the age of 11 to 15 years 48 (5.3%) students were stunting and 42 (4.6%) students were underweight. The difference in stunted and underweight showed more boys than girls. In the Pre nursery group more boys were stunted than girls, the ratio being 70%:30%, on the contrary underweight was more in boys than in girls, with the ratio of 57%:43%. In the Primary section both stunting and underweight were more in boys as compared to the girls. The ratios were 54.8%:45.2% and 82.9%:17% respectively.

Keywords: Malnutrition; students; nutritional status; children; male; female

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INTRODUCTION

Variety of poor outcomes including growth retardation, historically, the science of nutrition developed in and development of psychosocial difficulties. Water low 1995 of disease entities brought about reported that, etiology of linear growth retardation is by inadequate diet. Nutritional status is multi-factorial but has been explained by three major health of an individual as influenced by nutrient intake factors: poor nutrition, high levels of infection and utilization in the body. In world, approximately nutrients in preparation for rapid growth of adolescence 146 million children are underweight, out of these (**Akor, F. (2010)**).

Therefore, it becomes very important to know the nutritional status of school-going children; the building machine was used to measure the body weight to the blocks of state and country and hence the present nearest 0.5 kg. Malnutrition is a major public health problem in Pakistan, a South Asian nation with over 130 million people. Half of its children aged five years or less are stunted, over a third (38%) are underweight, and a quarter of all births are low birth weight (**Bhutta, 2000**). These high levels of malnutrition contribute to about half of the 740,000 child deaths that occur every year in Pakistan (**Batool, 2012**).

In view of the scale of the problem in children under five, nutritional programs in Pakistan during the last few decades have been targeted at this age group. However, malnutrition is a significant problem in older children as well, a fact that is often overlooked by policy makers and program managers. Though little is known about the state of nutrition in this older group, studies conducted in the 1980s indicate that malnutrition is a significant problem in this population, with a prevalence ranging from 47-70% in male school children in rural Pakistan (**Begum, 2008**).

The situation among school-aged children in urban squatter settlements in Pakistan is even less well known. These settlements contain a large proportion of the rapidly growing urban population, with high levels of malnutrition already documented in the under-five child population (**Farhin et al., 2021**). To assess the nutritional status of 7-10 years old Anthropometric Rapid migration to urban areas in the twentieth century has been accompanied by the development of slums (**Unger 2013**). These are unorganized settlements in urban areas with run-down housing, overcrowding, poor water and sanitation, poverty, and social disorganization. According to an estimate, nearly 1/3rd of the world's population lives in slums. Whereas in the least developed countries, more than 60% of urban populations lived in slums (**Nolan 2015**) The presence of slums has global and regional implications, affecting health, education, and child mortality. People living in slum areas are influenced by their surrounding environment (**Tomar et al., 2015**). Children living in these areas are more susceptible to acquiring infections and vulnerable to nutritional ailments. These ailments may adversely affect the child's intellectual development and productivity in later life. Numerous studies delineate the situation of malnutrition in children living in slum areas specifically the children in their first five years of life (**Farhin et al., 2021**).

Malnutrition contributes directly or indirectly to more than 60% of 10 million child deaths each year¹. In the developing world, 43% of children are stunted and 9% are wasted (**Black et al., 2017**). There are many determinants of malnutrition among school-going children. These include poverty, illiteracy amongst both parents and environmental factors, diseases, inadequate diet etc., which are even more powerful than genetic predisposition in producing deviations from the reference values³. School-going children are at increased risk of malnutrition because of many factors like poverty, lack of maternal knowledge regarding proper nutritional requirements of growing children, and poor hygienic

practices. Mothers tend to give money to children and they buy poor-quality food from canteens or from stalls outside the schools. Primary school age is a dynamic period of physical growth and mental development of a child. Research indicates that nutritional deficiencies and poor health in primary school-age children are among the causes of low enrolment, high absenteeism, early dropout, and poor classroom performance (Victoria et al., 2008).

The objectives of the present study are: 1- to explore the nutritional status of school going children aged 4 to 15 years, living Takht Bhai Mardan; 2- to explore gender, wise the nutritional status of school-going children.

MATERIALS AND METHODS

This observational, cross-sectional study was conducted in Takht Bhai District Mardan from April 2023 to September 2023. After ethical approval, students of 4-15 years were selected from the Govt schools located in this area. Demographic information along with weight and height of the selected children were taken and plotted to gender specific, growth charts.

The School Health Program was carried out on a systematic basis in the Rural Block. For the purpose of the present paper, the survey findings from schools surveyed from. The ages of the children were determined using school records. In the schools' nutritional status of children was assessed as follows: Weight: Measured using a floor type weighing scale with due respect to the standardization of the equipment and procedure. The measurements were taken to the nearest 5Kg. Height: was taken using a measuring tape applied to the wall. The measurements were taken with children barefoot with their back of heels, buttocks and head touching the wall. Readings were taken to the nearest 5cm.

Study Area and Period

The study was conducted in Takht Bhai Mardan, which is located Khyber Pakhtunkhwa. The Study was conducted from April 2023 to September 2023.

Study Design

Institutional based cross-sectional study design was used.

Study Population

All secondary and primary school students (age group) were the source population, whereas sampled or selected students were the study population of this study.

Sample Size Determination

A Total of 1500 children between the ages of 4-15 years were studied. A systematic random sampling technique was applied for sample collection.

<p>Demographics information: Child's Name: _____ Age: _____ Gender: _____ Grade/Class: _____ School Name: _____</p> <p>Family background: How many people live in the child's household? Male and female ratio in child's household? Family income status? Hereditary diseases in family?</p>	<p>General information Do you have breakfast every day before going to school? (Yes/No) How many meals do you typically eat in a day? Do you eat fruits and vegetables daily? (Yes/No) How often do you consume fast food? (Yes/No)</p> <p>Anthropometric Measurements Height (cm): ____ Weight (kg): ____ BMI (Body Mass Index): ____</p>	<p>Dietary Habits What is your favorite healthy food? How often do you drink water in a day? Less than 3 glasses 3-5 glasses 6-8 glasses More than 8 glasses Are you aware of the importance of a balanced diet? (Yes/No) Do you receive any nutrition education at school? (Yes/No)</p>
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RESULTS

A total of 1500 children between the ages of were analyses for this study. Out of 1500 school going students 600(40%) were found positive and 900(60%) were found normal according to age. Gender wise analysis shows that in male students 210(35%) were found positive for stunting and 150(25%) male students were underweight. In overall female students 135(22.5%) were found stunting and 105 (17.5%) were found underweight has been shown in Table 1 and Fig. 1.

Table 1: The overall nutritional status of school going students

Total samples	Positive samples	Negative samples	Male		Female	
			Stunting	underweight	stunting	underweight
1500	600	900	210(35%)	150(25%)	135(22.5%)	105(17.5%)

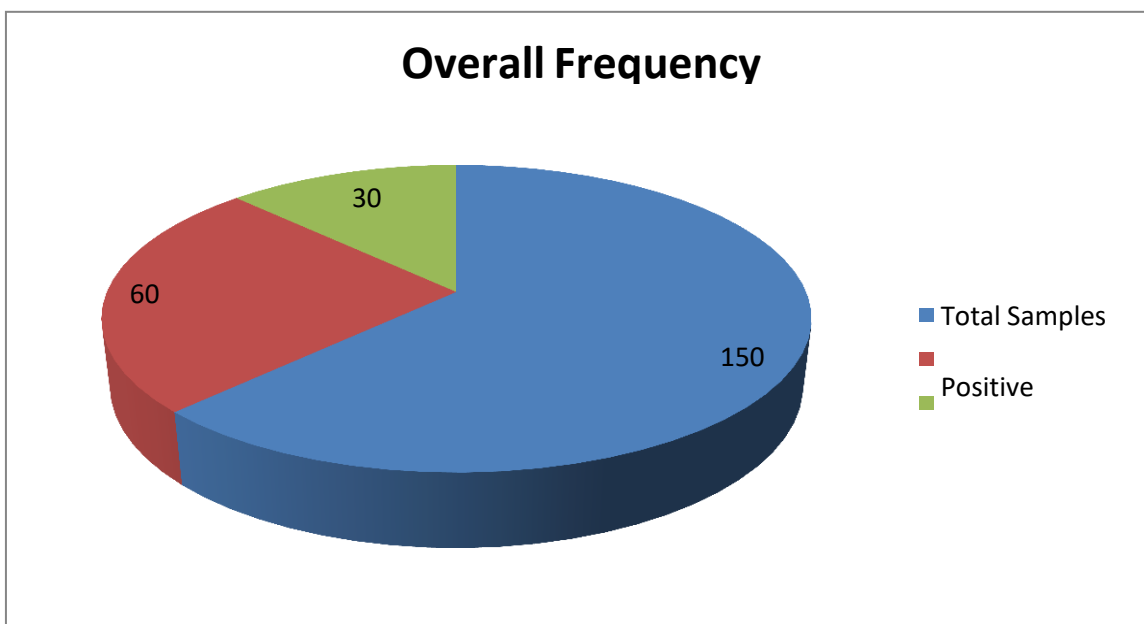


Figure 1: the overall samples wise frequency of nutritionally normal and abnormal students

Figure: 2 shows that according to age group wise between 4 to 10 years 150(25%) male students were found stunting and 90(10%) were found underweight. While in the age of 11 to 15 years 60(7%) students were stunting and 60(7%) students were underweight.

Figure:3 shows that according to age group wise between 4 to 10 years 90(10%) female students were found stunting and 60(7%) were found underweight. While in the age of 11 to 15 years 48(5.3%) students were stunting and 42(4.7%) students were underweight. The difference in stunted and underweight showed more boys than the girls. In the Pre nursery group more boys were stunted than girls, the ratio being 70%:30%, on the contrary underweight was more in boys than in girls, with the ratio of 57%:43%. In the Primary section both stunting and underweight were more in boys as compared to the girls. The ratios were 54.8%:45.2% and 82.9%:17%, respectively.

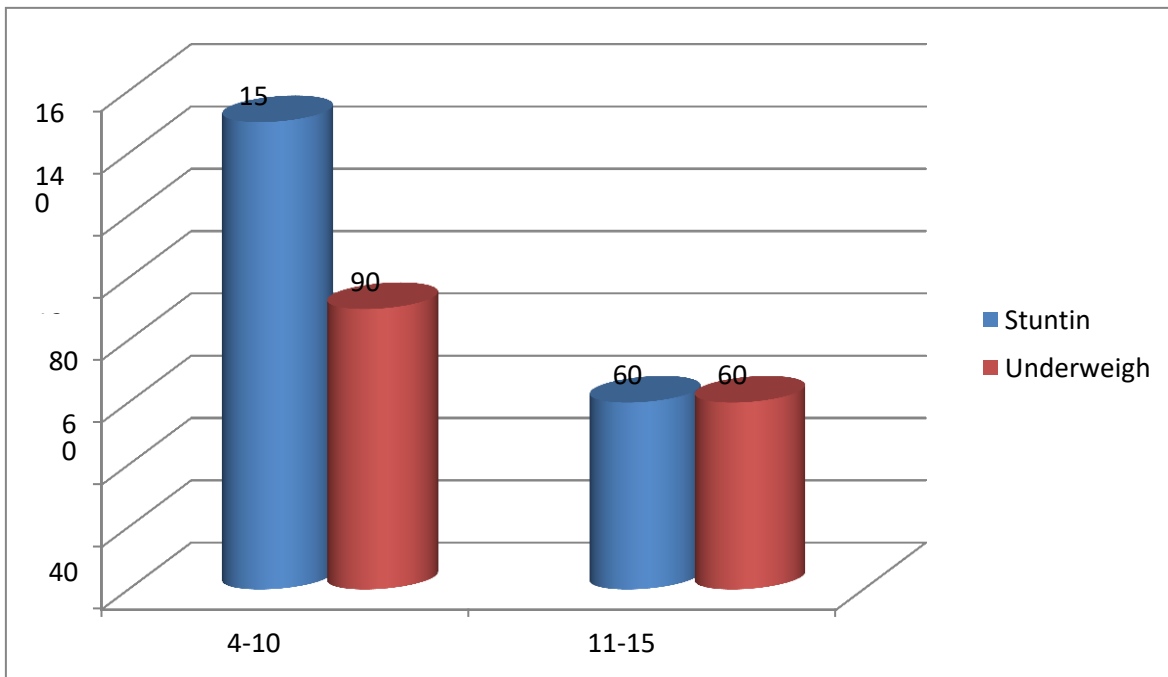


Figure 2: Frequency analyses of male students

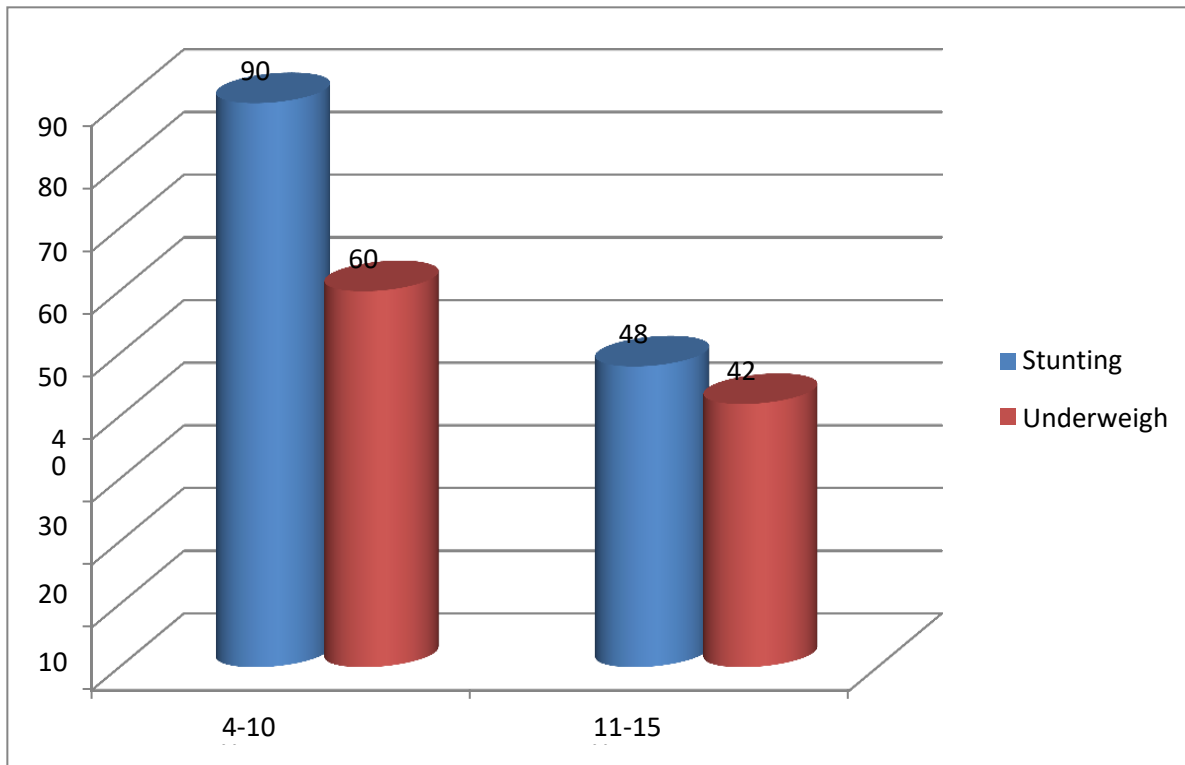


Figure 3: Frequency analyses of female students

DISCUSSION

This study was conducted at a small level in an urban area of Takht Bhai district Mardan of Pakistan and children belonging to middle socioeconomic class were included. Malnutrition continues to be a major problem in Pakistan. In the current study the overall prevalence of Out of 1500 school going students 600(40%) were found positive and 900(60%) were found normal according to age. Gender wise analysis shows that in male students 210(35%) were found positive for stunting and 150(25%) male students were underweight. In overall female students 135(22.5%) were found stunting and 105(17.5%) were found underweight. Similar work is also conducted by **Fakir et al., (2015)** who reported that the nutritional status in terms of prevalence of underweight, stunting and thinness found to be 30.85%, 24.54% and 10.05%, respectively among rural school going children of Katre district. It was revealed that 37.87% were underweight, 29.59% were stunted and 11.25% were thinness among male children whereas in female children, 26.27% was underweight, 21.24% was stunted and 9.27% was thinness. Hence, a high prevalence of underweight, stunting and thinness being observed in male than in female children.

The current study also shows that according to age group between 4 to 10 years 90(10%) female students were found stunting and 60(7%) were found underweight. While in the age of 11 to 15 years 48(5.3%) students were stunting and 42(4.7%) students were underweight. The difference in stunted and underweight showed more boys than the girls. In the Pre-nursery group more boys were stunted than girls, the ratio being 70%:30%, on the contrary underweight was more in boys than in girls, with the ratio of 57%:43%. In the Primary section both stunting and underweight were more in boys as compared to the girls. The ratios were 54.8%:45.2% and 82.9%:17% respectively. Similar research work also performed by **Ahsan et al., (2020)** showed that of the total 571 children, 348 (56.4%) were boys and 223 (43.6%) were girls. Nearly 89 (15.5%) children including 52 (10.5%) boys and 37(6.4%) girls had normal anthropometric indices. Stunting was the most frequent anthropometric failure (n=219, 38.3%) followed by wasting (n= 163, 28.51%) and underweight (n=100, 17.5%) respectively. Gender disparity was observed in the distribution of malnutrition with boys had higher frequency of stunting, wasting and underweight than girls.

CONCLUSION

The findings of the study revealed that slightly above one third (37.8%) school going children of Takht Bhai were thin, overweight and obese respectively. Low socioeconomic status, low literacy rate and large family size seem to be associated with the health status of primary school children. A lot more efforts are required on economic, educational and media to improve the nutritional condition of the new generation of Pakistan. Based on the findings; there must be collaboration among health sectors and education sectors of the city to address under nutrition problems of the city. As an intervention the scoters could do school-based nutrition education.

The present study has successfully documented the nutritional status in terms of prevalence of underweight, stunting among the rural school going children of Tehsil Takht Bhai district Mardan. There was a very high prevalence of underweight, stunting and thinness among male than in female children. The results of the present study will be useful for policy makers in their struggle to formulate various developmental and health care programs. Nutritional intervention is also necessary to upgrade the nutritional status among the children.

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